

FIG.3

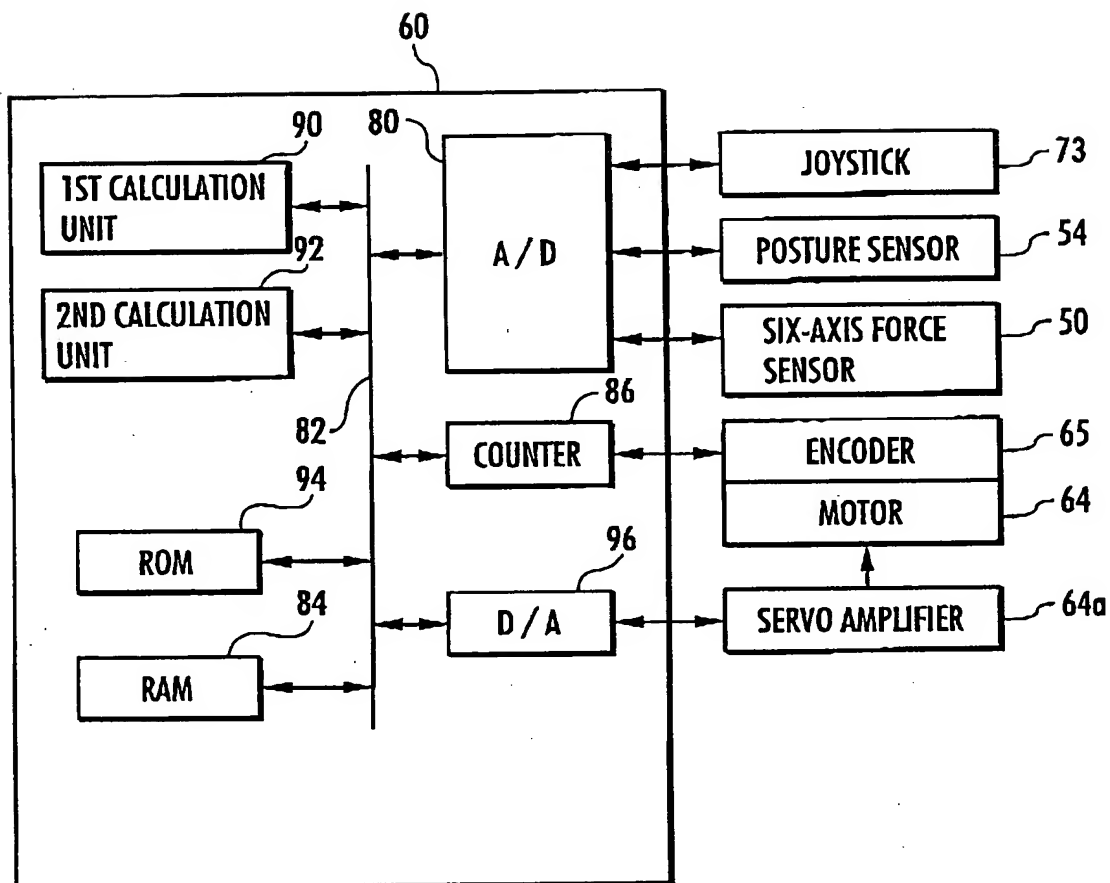


FIG.16

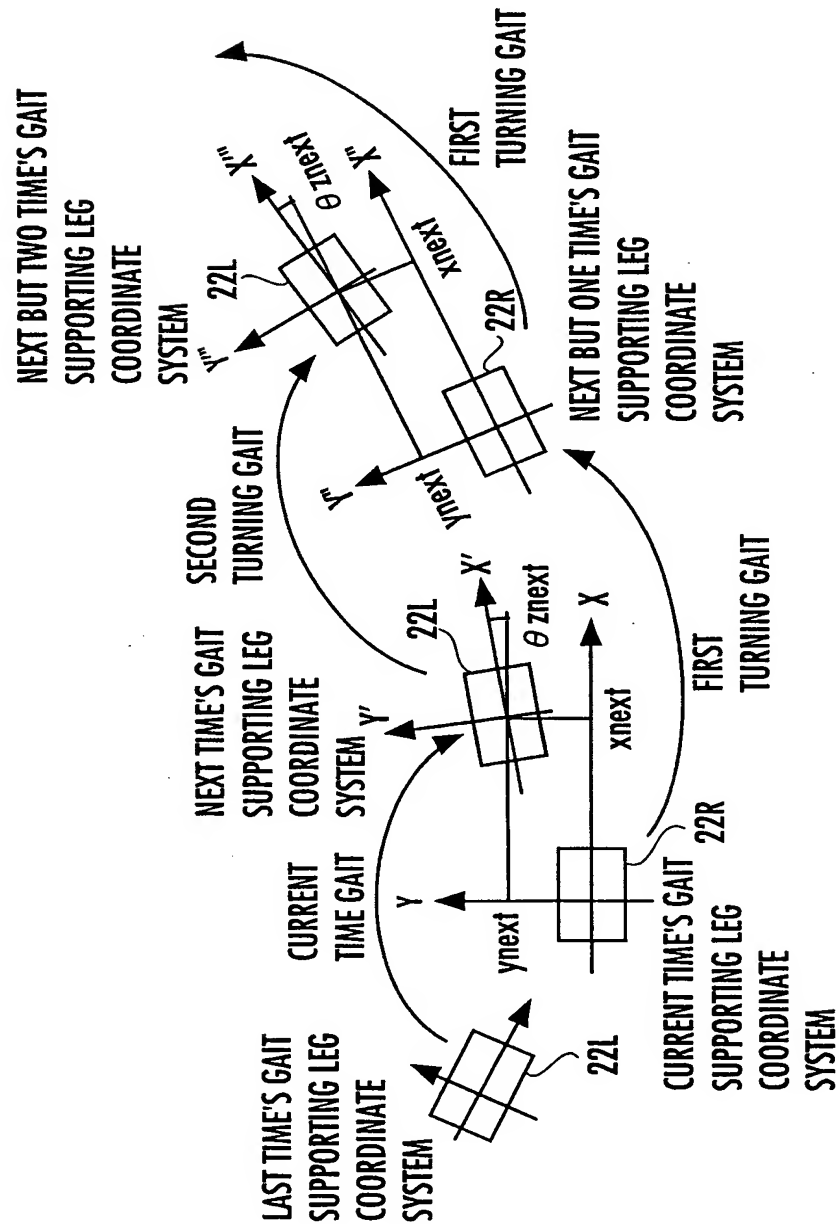


FIG.17

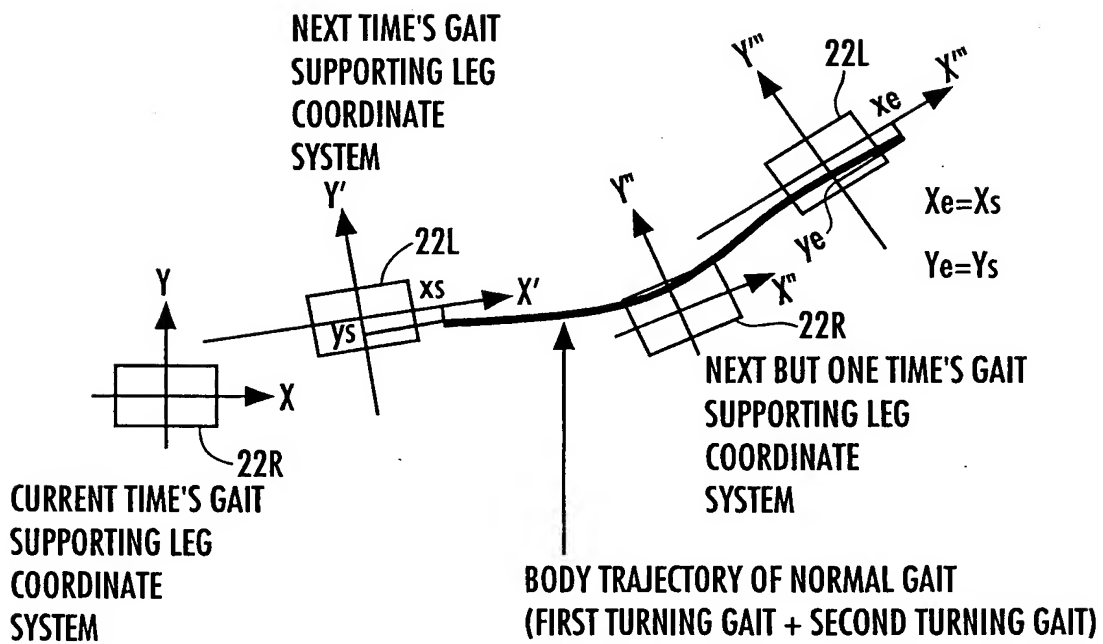


FIG.42

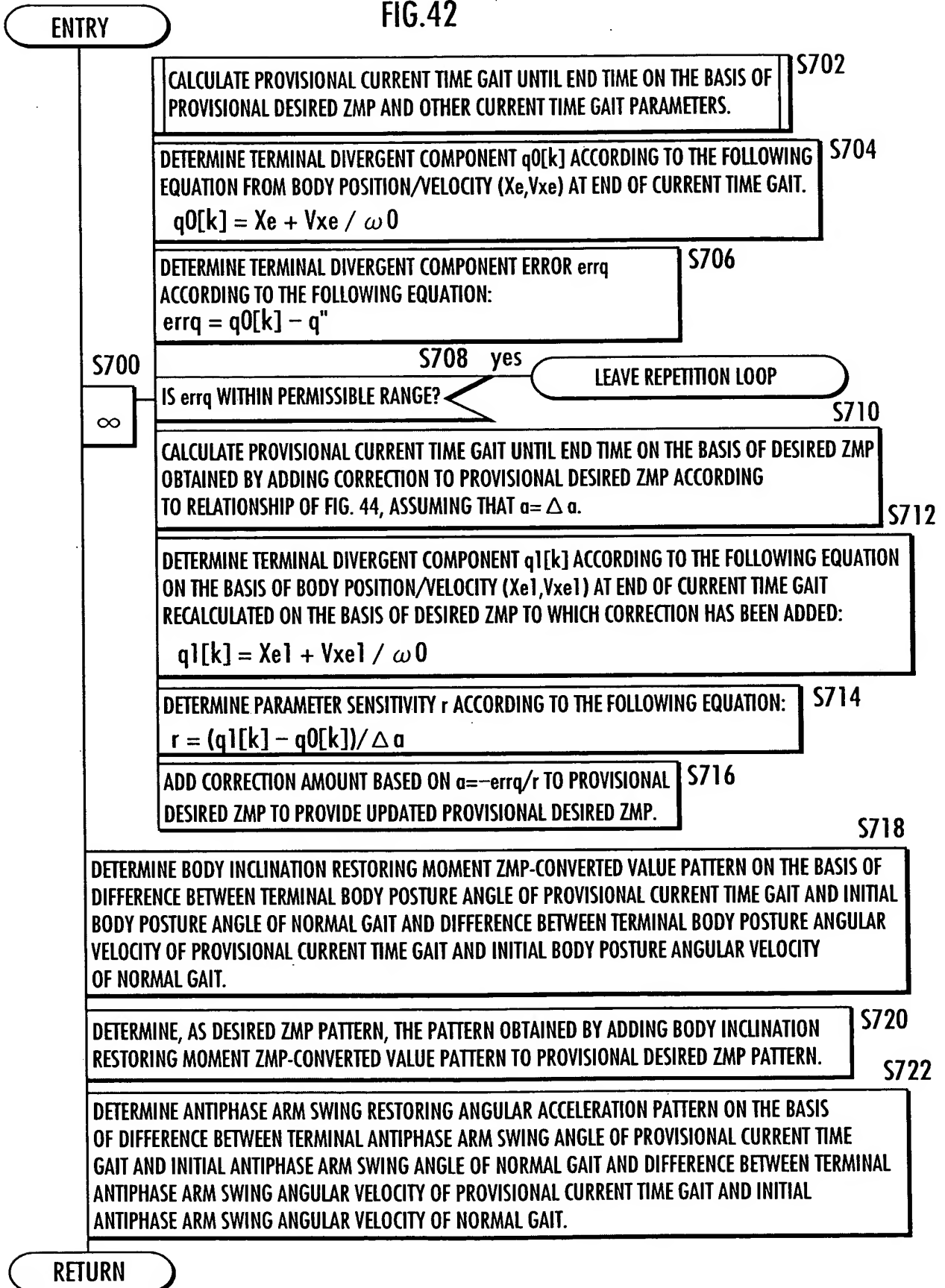


FIG.43

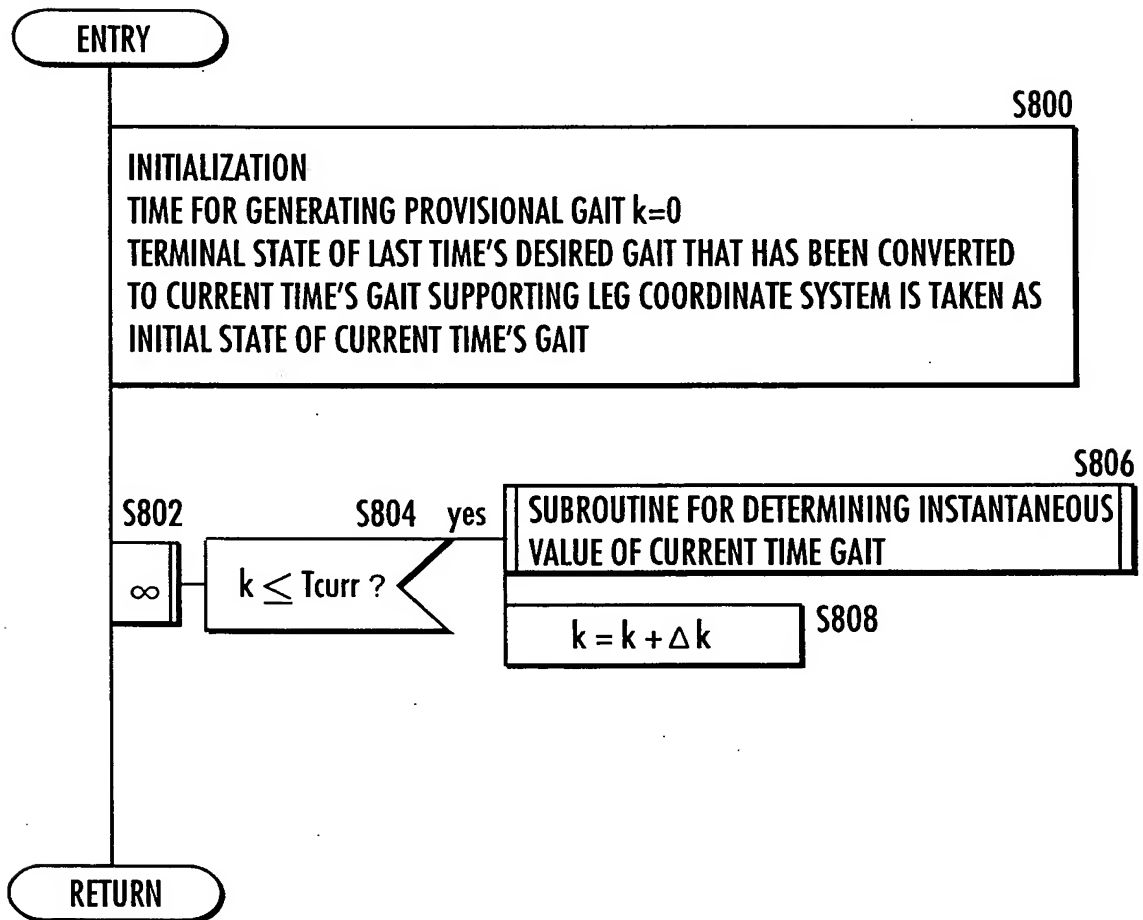
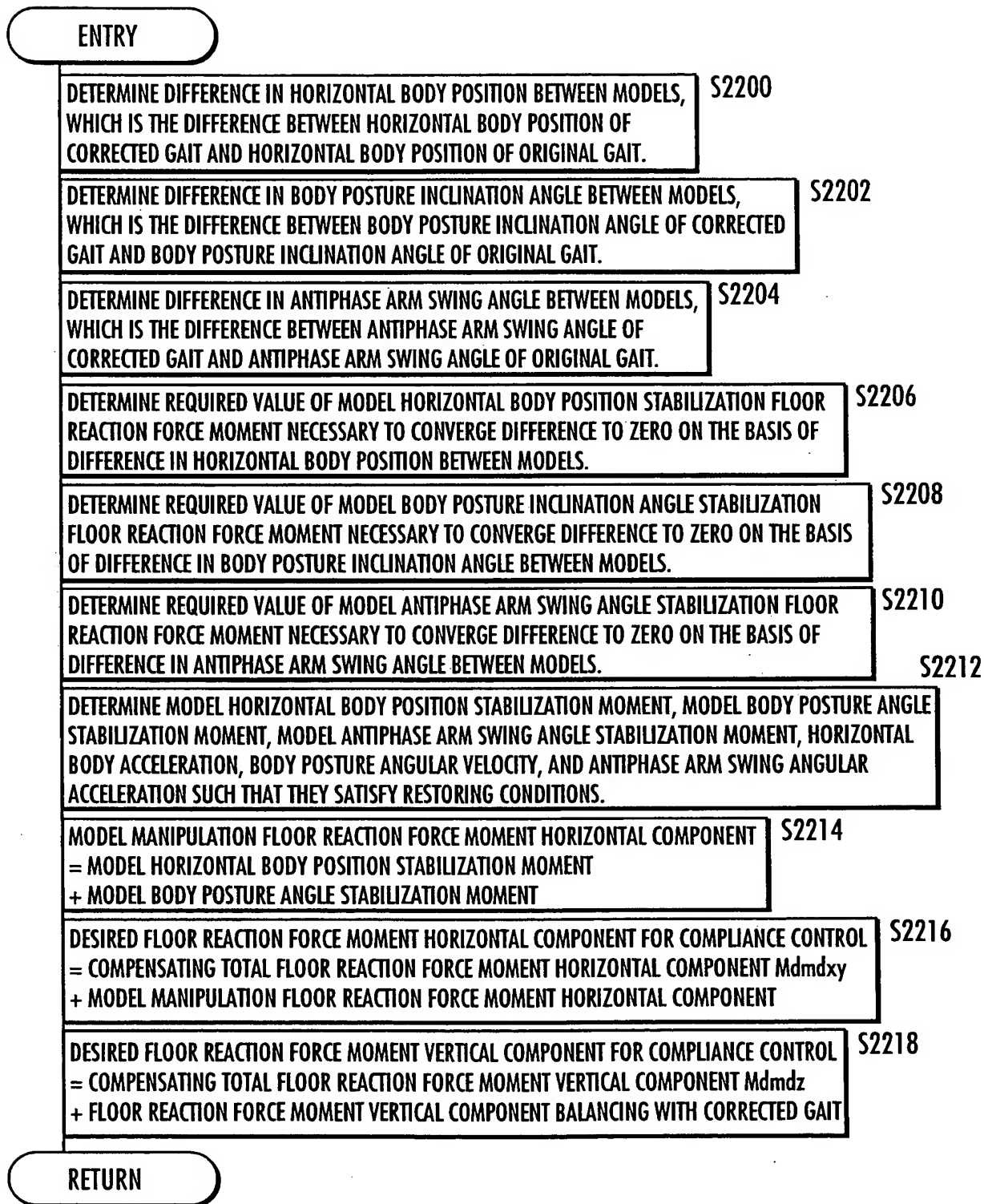


FIG.62



The diagram illustrates a complex control system for a bipedal robot, organized into several functional blocks and interconnected by signal lines. Key components include:

- Input and Reference Signals (Left):**
  - DESIRED ZMP (Zero Moment Point)
  - DESIRED FLOOR REACTION FORCE
  - DESIRED HORIZONTAL BODY POSITION
  - DESIRED ANTI-PAUSE ARM SWING ANGLE
  - DESIRED BODY POSTURE ANGLE
  - DESIRED CENTER-OF-GRAVITY VERTICAL POSITION
  - DESIRED ANTI-PAUSE ARM SWING ANGLE
- Model and Control Blocks (Top and Middle):**
  - 200: SIMPLIFIED MODEL** (includes a diagram of a robot arm) for processing ZMP and floor reaction force inputs.
  - 201: INVERSE FULL MODEL** (includes a diagram of a robot body) for processing body position and posture inputs.
  - 202: CORRECTING PERTURBATION MODEL** for horizontal body position.
  - 203: CORRECTING PERTURBATION MODEL** for body posture angle.
  - 204: SIMPLIFIED MODEL** for processing body posture angle and horizontal body position inputs.
  - 205: SIMPLIFIED MODEL** for processing horizontal body position and anti-pause arm swing angle inputs.
  - 206: HORIZONTAL BODY POSITION CORRECTING PERTURBATION MODEL** and **207: ANGLE CORRECTING PERTURBATION MODEL** for generating control laws.
  - 208: SIMPLIFIED MODEL** for processing body posture angle and horizontal body position inputs.
  - 209: DESIRED FLOOR REACTION (FULL-MODEL FLOOR REACTION COMPONENT F<sub>full</sub>)** block.
  - 210: INTEGRATOR (1/s)** block.
  - 211: DESIRED FLOOR REACTION FORCE MOMENT COMPONENT** block.
  - 212: DESIRED FLOOR REACTION FORCE MOMENT COMPONENT** block.
  - 213: DESIRED FLOOR REACTION FORCE MOMENT COMPONENT** block.
  - 214: DISTRIBUTOR** block.
  - 215: HORIZONTAL BODY POSITION CORRECTING STABILIZATION MODEL** (includes a diagram of a robot body).
  - 216: FULL-MODEL FLOOR REACTION COMPONENT F<sub>full</sub>** block.
  - 217a: ERROR CORRECTING MOMENT Me** block.
  - 217b: FULL-MODEL FLOOR REACTION FORCE** block.
  - 218: CORRECTING PERTURBATION MODEL** for horizontal body position.
  - 219: CORRECTING PERTURBATION MODEL** for body posture angle.
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  - 230: ANTIPHASE ARM SWING ANGLE CORRECTING PERTURBATION MODEL MOMENT DETERMINER** block.
  - 231: ANTIPHASE ARM SWING ANGLE CORRECTING PERTURBATION MODEL** block.
  - 232: ANTIPHASE ARM SWING ANGLE CORRECTING PERTURBATION MODEL** block.
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FIG.79

